

## REDISCOVERY OF *SPIRANTHES PARKSII* CORRELL

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*Spiranthes parksii* Correll was described in 1947 on the basis of specimens collected by H. B. Parks along the Navasota River (Democrat Bridge) in Brazos County, Texas (Correll, 1947). It appears that the late Dr. Parks was the only person to have seen a living plant. Correll (1950) and Correll and Johnston (1970) reported that this species was endemic to Brazos County but recent attempts to find it there have been unsuccessful (Luer, 1975; D. S. Correll and M. C. Johnston, pers. comm.). *Spiranthes parksii* is the only North American orchid not illustrated with a photograph in Luer's (1975) recent work on the North American orchids. It is one of the 20 species listed by Ayensu (1975) in an attempt to identify those North American orchids in serious danger of extinction. *Spiranthes parksii* is not only one of the rarest North American orchids, it is also one of the least well known.

While collecting data from the AMES orchid herbarium (Harvard University) in 1975, I noticed a sheet labelled "*S. cernua*, Hy College—Navasota, 10 miles west of Navasota R. bridge on hwy no. 6, H. B. Parks, 27 Oct 1945" (AMES 63043). This sheet had 12 plants mounted on it, some referable to *S. cernua*, others to *S. parksii*. The type of *S. parksii* (AMES 63039) was available for comparison.

On 25 Oct 1978, we had an opportunity to explore the Post Oak Savanna northwest of Navasota. Local residents reported that it had been a dry summer and perhaps for this reason *Spiranthes* spp. were not easily found. *S. cernua* (L.) L. C. Rich. occurred sparingly along margins of ponds and streams. Both the normal white open-flowered plants and more or less peloric, yellow closed-flowered plants were seen. A few *S. lacera* (Raf.) Raf. var. *gracilis* (Bigel.) Luer were found on dry sandy banks, all past anthesis.

Exploring the open banks of a temporary stream surrounded by scattered oaks (*Quercus stellata*, *Quercus marilandica*) and Beauty-berry (*Callicarpa americana*), several *Spiranthes* orchids were found among the open cover of grasses and forbs (Fig. 1). Some of these were closed-flowered *S. cernua* but others scattered among them had open greenish-white flowers with relatively short rounded petals and an ovate, distally truncate lip. The floral bracts of these plants also differed in having distinctly whitened tips. A close examination and dissection of a few flowers indicated that these plants



Fig. 1. Open grassy meadow habitat of *S. parkii* along a temporary stream. Dominant plants include *Schizachyrium scoparium* var. *frequent*, *Sporobolus junceus*, and *Eupatorium compositifolium*. Photographed 25 Oct 1978, ca. 19 km NW of Navasota, Brazos Co., Texas.

were beyond any doubt referable to *S. parksii*, the description and original illustrations of which we had with us.

The dominant plant associates here included *Schizachyrium scoparium* var. *frequens*, *Panicum brachyanthum*, *Aristida longispica*, *Sporobolus junceus*, *Eupatorium compositifolium*, and *Linum medium* var. *texanum*. *Chrysopsis pilosa* and *Ascyrum hypericoides* var. *hypericoides* were also present.

A few hundred yards away we found more plants of *S. parksii* on the banks of another temporary stream (Fig. 2). The vegetation here was again an open oak woodland (*Q. marilandica*, *Q. stellata*, *Q. nigra*) but with scattered thickets of *Forestiera ligustrina*, *Callicarpa americana* and *Ilex vomitoria*. *Spiranthes parksii* occurred both on the tops of the banks in open sand with a sparse cover of grasses, and on the sides of banks sometimes in the shade of thickets. Dominant associates here included *Andropogon ternarius*, *Andropogon virginicus*, *Aristida longispica*, *Muhlenbergia capillaris*, *Linum medium* var. *texanum*, *Eupatorium compositifolium*, and *Smilax bona-nox* var. *bastata*. *Paspalum setaceum* var. *stramineum*, *Ascyrum hypericoides* var. *hypericoides* and *Drosera annua* were also recorded as associates at this location.

In all, seven plants were found at the first locality and 13 at the second. Soil collected from about the roots of several plants was found to have a pH range of 4.0–5.8, with most readings between 4.5 and 4.9.

Since the flower color of *S. parksii* has not been described, various floral parts were compared with the Royal Horticultural Society Colour Chart (1966). The general flower color (*i.e.* the conspicuous perianth parts) varies from white (155A) to light yellow-green (154D). The dark green color of the ovary (144A–B) extends onto the basal perianth parts for 0.5–2.0 mm. Lateral petals vary from whitish (155A) to yellow-green, (144B–C, 154C). The midvein region is slightly greenish (145C) in white lateral petals and darker green (144A) in greenish lateral petals. The central portion of the lip varies from yellow (2D) to yellow-white (158B–C) and yellow-green (150C, 151C 154C). The calli are white (155A–D). The stigmatic surface is green (144B, C) but the proximal stalk of the column is white (155A–D) and the pollen masses are yellow (9B) to light yellow-orange (14C). The darkest green color in the flowers occurs in the basal perianth parts, in the lateral petals and on the stigmatic surface. The remainder of the plant is green (144A) except for the floral bracts which are white 1.5–3.0 mm from the tip.

Although no insects were observed pollinating the flowers, the pollinia are easily detached, and the stigmatic surface is viscid, the pollen readily adhering to it. A drop of glucose-rich liquid is secreted near the base of the lip. These characteristics suggest insect pollination, but the ovaries can enlarge and develop seed without pollination. Brown and withered flowers on several plants had the pollen masses intact and the stigmatic surface had not received any pollen. The ovaries of these withered flowers contained



Fig. 2. Habitat of *S. parksii* (lower center). Several plants were growing on the high banks of a temporary stream in the open with *Andropogon ternarius*, *Andropogon virginicus*, *Muhlenbergia capillaris*, and others (see text). The surrounding trees are *Quercus marilandica*, and *Quercus stellata*. Photographed 25 Oct 1978, ca. 19 km NW of Navasota, Brazos Co., Texas.



Fig. 3. Flowers of *S. parksii* showing relatively short lateral petals and white-tipped floral bracts. Photographed 25 Oct 1978, ca. 19 km NW of Navasota, Brazos Co., Texas.

immature seeds of which 80–90% were polyembryonic. The occurrence of polyembryony in *Spiranthes* is associated with adventitious embryony (Swamy, 1948; Catling, unpublished data).

With its rounded or oval lateral petals (4.5–6.7 mm long) much shorter than the sepals (5.0–8.0 mm long), and a distally truncate, erose-margined lip (5.0–7.0 mm long), *S. parksii* appears to be a very distinctive species. The loosely flowered spike and absence of leaves at flowering time also help to separate *S. parksii* from other sympatric *Spiranthes* spp. These features are well illustrated in the drawings provided by Correll (1947, 1950) and in the accompanying photograph (Fig. 3). The green marking along the center of the lateral petals and the white-tipped floral bracts are helpful in field identification. *S. parksii* keys out readily in keys provided by Correll (1950) and Correll and Johnston (1970).

Correll (1947) thought that *S. parksii* had no close allies in our flora, its affinity being with several Mexican and Central American species. Its taxonomic status and evolutionary relationships are indeed a matter of great interest.

In view of the general rarity of the plant, it seems desirable to document any future discoveries with photographs, measurements and detailed field notes rather than a large series of collected specimens.

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